

HANOVER COLLEGE
ECO 328: ECONOMETRICS

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Required text and software

"Using Econometrics. A Practical Guide", 5th ed. A. H. Studenmund

The textbook is bundled with Eviews, a user friendly econometric software package.

Course overview

This course introduces the tools and methods economists use to empirically evaluate economic theories and relationships. This field of economics is called econometrics. The only way to learn econometrics is by actually doing it, thus, numerous regressions will be estimated, using real economic data, and the empirical results will be interpreted. In addition, regressions will also be estimated using constructed data (simulations) to explore the theoretical assumptions of the regression model in order to learn and comprehend the many pitfalls in a regression analysis. Furthermore, to aid in the understanding of econometrics you will read a number of (very interesting) journal papers, summarize them and critically evaluate them. A major portion of the course will be devoted to a research paper (the topic is your choice!) where the tools of econometrics will be applied to answer an economic research question.

Grading

Problem sets	15%
Quizzes	15%
Summary of papers	15%
Midterm	25%
Research Paper	18%
Paper proposal	3%
Review of literature	3%
Discussion of results	3%
Presentation	3%

In addition, participation may also be taken into account, particularly in borderline cases.

In assigning letter grades the department's grading scale will apply:

A+ 97%	B+ 87-89%	C+ 77-79%	D+ 67-69%	F below 60%
A 93-96	B 83-86	C 73-76	D 63-66	
A- 90-92	B- 80-82	C- 70-72	D- 60-62	

Prerequisite

Eco 113 or Eco 114, Eco 213 or Eco 214 and Eco 257 (or Mat 327 or Mat 437).

Academic honesty

Complete honesty is expected in all work submitted for this course. Penalties for academic dishonesty are stated in the Academic Catalog. These penalties, however, are the minimum penalties that can be imposed and instructors can impose stiffer penalties. In this course, academic dishonesty will result in a dismissal from the course and a letter grade of an F.

PROBLEM SETS

Several problem sets will be assigned throughout the term. The problem sets consist mostly of regression exercises as well as data generation and simulations. **Problem sets must be typed** with all the relevant information (such as regression results and hypotheses tests). Printouts of all Eviews regressions and, if applicable, hypotheses tests must be attached to the problem sets. Late problems sets will not be accepted. Problem sets can be retrieved from the course's website.

QUIZZES

Several quizzes will be given throughout the term based on selected end-of-chapter problems (see schedule for exact problems). Each quiz will have a question or two from these selected end-of-chapter problems. Answers to even-numbered problems are given at the end of the textbook and I have placed answers to the odd-numbered problems on reserves at the library. It is entirely your responsibility to go over these problems and answers prior to each quiz. Feel free to stop by my office during office hours (prior to the quiz) to clarify any answers.

SUMMARY OF PAPERS

The summary of assigned journal papers should be in two parts (grade wise, the two parts have equal weights).

1. The first part should include a summary of the paper: the objective of the paper, hypothesis that are tested, discussion and the implications of a particular regression results (you will have to type this regression in your summary along with explanations of each variable in the regression and explain what the coefficients mean). Finally, you should discuss the paper's main conclusions. The length of the first part should not exceed 2 pages (single spaced).
2. The second part should include a critical review of the paper's regression(s) and methodology, such as, what additional variables should have been included in the regressions (or excluded) and what should have been done differently. You **MUST** provide an economic or intuitive explanation for the inclusion or exclusion of variables. The length of the second part should not exceed 1 page (single spaced).

Each summary must be submitted electronically to me (through e-mail) in a Word file. The Word filename should have your full name and an abbreviated title of the paper (an example would be: AgustEirikssonSpeedingCoordination.doc). You also need to turn in a hard copy of the summary.

Most of the journal papers can be accessed through the course's website.

RESEARCH PAPER

The research paper will be done in four phases:

- Phase I. 1-2 page (single spaced) essay on a research question.
- Phase II. 2-4 pages of review of literature (at least 2 published papers).
- Phase III. 3-4 page discussion of regression results.
- Phase IV. 6-10 page research paper on the edited material from the previous phases.

Phase I, paper proposal. 1-2 page (single spaced) essay which poses a research question from any field of economics and develops a strategy for answering that question using regression analysis. The strategy will identify the dependent variable, set of explanatory variables, the type of data required and sources of data. The most important part of the project is the data. Without the data, you don't have a project. Thus, you need to identify the exact data (additional data might be added at a later stage) you need to answer the research question. Attach to the proposal a printout/copy of the data.

After the first submission, students will discuss the proposal in class with classmates. The essay will then be revised and resubmitted. The revised essay will serve as the student's proposal for the project but the first submitted essay will be graded.

Phase II, review of literature. 2-4 pages (single spaced) of review of literature which identifies at least two papers published in academic journals (or working paper series) that are directly related to your research question. These papers might identify, theoretically, the variables needed to conduct an econometrics study or the papers might be an econometrics study on the same subject you have chosen as your research question. You have to be very careful in selecting these papers since they are supposed to help you in your own project, i.e. they should help you identify the relevant variables in the regressions and provide theoretical motivation for including these variables.

Your essay will review and critique these papers/studies very carefully. In particular, your essay will identify the theoretical propositions tested in the papers, identify the dependent and independent variables, and discuss any econometric problems and possible solutions.

Econlit can be used to locate these journal papers and Jstor has some economic journals with papers in PDF format that can be downloaded (you may have to use the interlibrary loan service to get some of the journal papers you need for the project).

Phase III, discussion of econometric results. 3-4 page (single spaced) report on your preliminary regression results. The report should identify the specific research question, describe the data used to answer that question, present the results, and describe the empirical problems and methods used to correct those problems.

Phase IV, final paper. 6-10 page (single spaced) research paper on the edited and revised material from the previous phases.

PAPER PRESENTATION

At the end of the term you will give a 15-20 minute presentation on your project. In your presentation you should:

1. Give a brief introduction to your topic (give us a reason for why we should listen to you for the next 15 minutes).
2. (i) Present the theory behind your regression. What is your dependent variable? Why have you included these particular independent variables in the regression and what does theory suggest with respect to signs and, if relevant, magnitudes?
(ii) How are the variables in the regression measured? Present the regression results and explain them.
3. Concluding remarks. What is the meaning of your results?

You should use Power Point for your presentation and dress professionally (this might be the only time you'll see me with a tie!).

OUTLINE OF THE NECESSARY STEPS IN WRITING AN ECONOMETRICS PAPER

There are four steps in writing an econometrics paper,

1. Model
2. Data
3. Estimation.
4. Write-up

1. The Model.

The model and the data are the starting points of an econometrics project. The first step in formulating a model is to select a topic of interest (browse through your previous economics textbooks or use Econlit (economics research search engine) to explore journal papers for potential topics). Thought should be

given to the objectives of the study, what hypotheses might be tested and **data availability** (if there is no data, you don't have a project!). The model must have a causal relations among the variables.

The selected topic should be an economic one (macro or micro). The model will include a dependent variable (the variable to be explained, or Y) and at least 3-4 important independent variables (explanatory variables, or X). The model should be formulated as an algebraic equation and a verbal explanation of the model should be given. The expected sign of all coefficients should be considered.

You can choose whatever topic interests you, but to give you some idea, the following lists potential topics (and feel free to adopt these topics or any variation of them):

- Budget deficits and interest rates.
- Determinants of economic growth.
- Consumption, saving and interest rates.
- Macroeconomics effects of monetary policy changes.
- Income taxes, labor supply and government tax revenue.
- The effect of unemployment on crime.
- The effect of sin-taxes on smoking.
- The relationship between exports and economic growth in less developed countries.
- Determinants of net exports in country A.
- Exchange rate variability and volume of trade.
- Inflation and import prices.

2. The Data.

There is now a large number of data sets available on the Internet. Once you have selected a topic you need to find relevant data. The following lists some possible data sources (see also the course's website for links to these data sources and other data sources).

- ETS (very comprehensive data source, mostly for the U.S.).
- Penn World Data (International data).
- International Financial Statistics from IMF (available at Duggan library: Periodicals).
- BLS statistics (includes some international data).
- Statistical abstract of U.S (includes some international data).

The data set can be either time-series or cross-section and should include at least 40 data points. The data should be examined, and if necessary, refined to make the data suitable for the regression analysis. Time-series data may have to be seasonally adjusted (particularly if you have quarterly data that has not been seasonally adjusted) or time-trends may have to be removed. In a cross-section of countries it may be inappropriate to include all countries that are UN members. The developed countries might be treated as one group and the developing countries might be treated as another. Dividing the data into subsamples not only leads to more homogenous data sets but also allows for comparative analysis.

3. Estimation.

Once the topic has been selected, the model formulated and the necessary data been collected, the next step is to use econometric techniques to estimate the model and test relevant hypotheses. Eviews should be used to estimate these regressions.. Make sure you have enough observations for all the variables and the variables show some variation over the sample period. You should not estimate any identities (such as $Y=C+I+G+NX$) or using the dependent variable on the right hand side of the equation unless it is lagged.

4. Write-up.

The paper should be approximately 6- 10 pages (single spaced, or 12-20 pages double spaced), 12 point Times font should be used and all margins should be 1".

The following outline is suggested:

I. Introduction

Discuss the nature and objectives of the topic, provide a general description of the scope of the model, and the hypotheses to be tested and/or policies to be evaluated. Here you should motivate your paper by explaining why the issues you are studying are important. Give the reader a reason(s) to read the remainder of the paper.

II. Review of Previous Literature

Discuss the approaches and results of previous studies of this topic or related topics. Explain how your paper is different (or better) from the previous literature.

III. Specification of the Model

Define and discuss the specification of your model. What variables are included in the model? Explain why you chose those variables and the role they play in the model. Have you included all the important variables in the model? What are the expected signs of all the coefficients? Explain the assumptions being made in the model.

IV. Data Description

Provide complete descriptions of all the data, their sources and data refinements.

V. Results

Present the estimates of the model and its related statistics such as standard errors, t statistics and the R^2 . Discuss which coefficients are significant at the 5% and 1% levels. Present the econometric results in a nice formatted table, DO NOT SIMPLY CUT AND PASTE FROM EVIEWS. If relevant, a discussion of possible serial correlation and its correction; a discussion of possible heteroscedasticity and its correction; and a discussion of possible multicollinearity and its correction. Estimate alternative models to test the robustness of the results.

VI. Discussion

Discuss the signs and magnitudes of the estimated coefficients and their comparisons to predicted or theoretical signs and magnitudes. Discuss how the estimated coefficients compare to previous studies. What do your coefficients mean? What have you learned? Are there any public policy implications of your regression results? Consider how the model might be reformulated in future studies, and implications for future econometric research.

VII. Conclusions

Sum up the major results of your study.

VIII. Bibliography

Include complete citations of all items referred to in the paper.

IX. Data

If reasonable, provide a table of all the data used. At a minimum, provide summary statistics (average, standard deviation etc.) of the data.

At any time, I will be happy to assist you in completing the project, but we must all remember that it is your project. The responsibility for choosing the topic, clarifying the issues, gathering the evidence, and doing the analysis is yours. I will help you to refine your ideas, to discover and circumvent any pitfalls you may encounter, to put the finishing touches on your research design and to express your ideas more coherently, but I will not deny you the joy of discovering that you can do this kind of independent research.